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concluded

operatively associated with the detector produces output data indicative of a lattice characteristic of the specimen being tested.

In the Specification:

5           **Please replace paragraph 0010 on page 5 with the following rewritten paragraph:**

10           [0010]    Non-destructive testing apparatus according to one  
              embodiment of the invention comprises a photon source. The  
              photon source produces photons having predetermined energies and  
              directs the photons toward a specimen being tested. The photons  
              from the photon source result in the creation of positrons within  
              the specimen being tested. A detector positioned adjacent the  
              specimen being tested detects gamma rays produced by annihilation  
              of positrons with electrons. A data processing system  
15           operatively associated with the detector produces output data  
              indicative of a lattice characteristic of the specimen being  
              tested.

✓ **Please delete paragraph 0011 on page 5.**

In the Claims:

20           **Please replace claim 20 with the following rewritten claim:**

25           20. Non-destructive testing apparatus, comprising:  
              a photon source, said photon source producing photons  
              having a predetermined energy and directing the photons  
              toward a specimen being tested, the photons from said  
              photon source resulting in the creation of positrons within  
              the specimen being tested;  
              a detector positioned adjacent the specimen being  
              tested, said detector producing raw data indicative of a  
              positron annihilation event; and  
30           a data processing system operatively associated with  
              said detector and said photon source, said data processing  
              system operating in accordance with a normal

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activation/analysis process when a half-life of a selected  
positron emitter within the specimen being tested is  
greater than a predetermined half-life, said data  
processing system operating in accordance with a rapid  
activation/analysis process when a half-life of the  
selected positron emitter within the specimen being tested  
is less than the predetermined half-life, said data  
processing system, when operating in accordance with the  
rapid activation/analysis process, alternatively activating  
said photon source and detecting raw data indicative of a  
positron annihilation event, said data processing system  
including a Doppler broadening algorithm, said Doppler  
broadening algorithm processing raw data indicative of a  
positron annihilation event to produce output data  
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indicative of a lattice characteristic of the specimen  
being tested.

✓ Please cancel claim 25 without prejudice to the subject  
matter contained therein.

Please replace claim 26 with the following rewritten claim:

20 26. (Amended) Non-destructive testing apparatus,  
comprising:

positron activation means for activating a positron  
emitter within a specimen being tested;

25 detector means for detecting a positron annihilation  
event within the specimen being tested and for producing  
raw data indicative of the positron annihilation event;

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means for alternately activating the positron emitter  
within the specimen being tested and detecting a positron  
annihilation event; and

30 data processing means operatively associated with said  
detector means, said data processing means processing raw  
data indicative of the positron annihilation event in  
accordance with a Doppler broadening algorithm to produce